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ABSTRACT

The purposes of this project are to: (1) develop an ethnographic video case (EVC) CD-ROM of three Chinese teachers teaching the Chinese language in secondary school classrooms in China according to a thinking-skill model developed by Dr. Lin Chongde called "Five Traits of Thinking"; (2) obtain formative data for fixing the improving the CD-ROM, and (3) find out the feelings of the users toward this new method of instruction. It is an exploration of an alternative or supplementary method for professional development of teachers in China using computer technology. The report includes background information, a detailed description of the EVC CD-ROM, and an evaluation of 10 Chinese teachers' attitudes toward the final product. Appendices include: a sample of notes taken during a focus group session; sample of notes taken during an interview with one participant; sample of notes taken while observing one particular participant; self report (in Chinese); and original schedule for the project. (Contains 50 references.) (Author/AEF)

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USING VIDEO CASE STUDIES FOR THE PROFESSIONAL DEVELOPMENT OF TEACHERS IN CHINA

By

Yee Kong Peter Chan

A project submitted to the faculty of

Brigham Young University

In partial fulfillment of the requirements for the degree of

Master of Science

Department of Instructional Psychology and Technology

Brigham Young University

August 2000

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Y.K.P. Chan

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ABSTRACT

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Department of Instructional Psychology and Technology

Master of Science

The purposes of this project is to (1) develop an ethnographic video case (EVC) CD-ROM of three Chinese teachers teaching the Chinese language in secondary school classrooms in China according to a thinking-skill model developed by Dr. Lin Chongde called "Five Traits of Thinking," (2) obtain formative data for fixing and improving the CD-ROM, and (3) find out the feelings of the users toward this new method of instruction. It is an exploration of an alternative or supplementary method for professional development of teachers in China using computer technology. The report includes background information, a detailed description of the EVC CD-ROM, and an evaluation of ten Chinese teachers' attitude towards the final product.

BRIGHAM YOUNG UNIVERSITY

GRADUATE COMMITTEE APPROVAL

of a master's project submitted by

Yee Kong Peter Chan

This project has been read by each member of the following graduate committee and by majority vote has been found to be satisfactory.

Date	Russell T. Osguthorpe, Chair
Date	R. Carl Harris
Date	David D. Williams

BRIGHAM YOUNG UNIVERSITY

As chair of the candidate's graduate committee, I have read the project of Yee Kong Peter Chan in its final form and have found that (1) its format, citations, and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the graduate committee and is ready for submission to the university library.

Date

Russell T. Osguthorpe
Chair, Graduate Committee

Accepted for the Department

Paul F. Merrill
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Accepted for the College

Robert S. Patterson
Dean, David O. Mckay School of Education

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I feel grateful for the constant love and support of my dear wife Joyce. Without her, life will have no meaning.

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Using Video Case Studies for the Professional Development of Teachers in China

In 1999 the Ministry of Education of the People's Republic of China initiated a plan called Education in the Twenty-first Century, which aimed at reforming the country's educational system. One major part of this plan, the Yuan Ding Project, focused on improving teacher education at elementary and secondary levels. The word Yuan Ding means a gardener. The name implies that a good teacher should be like a good gardener, someone who loves and nurtures his or her plants and allows them to blossom in their own way. The Yuan Ding project description indicates that the problems of teacher education in China include the inadequacy of quality preservice teachers, the inefficiency of continuing education for inservice teachers, and the ineffective structures of normal institutions (Ministry of Education, 1999).

To solve these problems, the Yuan Ding project reexamined the current strategies in teacher training and emphasized that technology could make a strong impact on Chinese education. Indeed, technology is a key in modernizing China and increasing the global-economic competitiveness of its people. Chinese government leaders such as Jiang Zemin and Deng Xiaoping have repeatedly stressed the importance of technology. As the Ministry indicates: "Extensive use of technology can lead to fundamental changes of the education system . . .. China must be prepared to accept new challenges and educational revolutions" (Ministry of Education, 1999b).

Dr. Shen Jiliang, one of the expert consultants of the Yuan Ding project, observed that "computer-based instructional tools that can be broadly disseminated can be most beneficial in retraining Chinese teachers because of the large number of teachers and their dispersed geographical locations" (Shen, 1998). Shen also indicated that China has

more than eleven million full-time teachers, yet no computer-based instructional tools are available for teacher training purposes at the present time. Therefore, when he and his associates at Beijing Normal University (BNU) became aware of an initiative at Brigham Young University (BYU) to develop an ethnographic video case CD-ROM for teacher training, they requested that an experiment be conducted to extend the current work and to explore its potential in China.

Existing CD-ROM materials, however, were in English, and all the video cases had been captured in American classrooms. To effectively explore the potential of such a CD-ROM in China, we could not simply translate the materials into Chinese because of the obvious difference in classroom cultures, teacher and student behavior, and perspectives on what had happened. Although a cross-cultural study would have its own benefits, it would not cater to the needs of Chinese teachers. Therefore, a Chinese version of the ethnographic video case CD-ROM needed to be developed with authentic cases of Chinese teachers and commentaries by Chinese educators. The video cases had to be based on educational theory or principles that matched the training needs of the Chinese teachers. Because of the experimental nature of such a technological production, it would need to be evaluated by the end-users in order to ensure its functionality. Therefore, this project was initiated as a way to meet these needs.

Description of Stakeholders

One way to increase the probability of utilizing the results of a project is to clearly identify its stakeholders and their needs, and then to meet those needs (Patton, 1997). In this project, the stakeholders fit into three groups with varied functions and interests.

The first group comprised our associates at Beijing Normal University and the

Chinese Ministry of Education. They included Dr. Lin Chongde, Dr. Shen Jiliang, and Dr. Xin Tao of the University, and other officials of the Ministry. This group coordinated the Chinese share of the work for this project, which included scheduling the teachers and students for recording, identifying teachers for the pilot testing, and working out other logistic matters. Their main interest was to see that the content of the Chinese ethnographic video case CD-ROM focus on a thinking skill theory that Dr. Lin Chongde had developed for facilitating teaching and learning in the classroom. (More information about this theory called Five Traits of Thinking is provided in the Content Research Review section.) For this first CL-ROM, they recommended recording secondary level Chinese language classes whose teachers had been trained in using Lin's thinking skill theory. They were also interested in knowing how well the teachers thought the ethnographic video cases helped them learn to apply thinking skills in Chinese language instruction.

The second group of stakeholders comprised the authors of the ethnographic video cases, which included Dr. Carl Harris and myself. Dr. Harris was the main author of all the previous English video cases and also my supervisor. I was the author of the project. Our main interest was to produce a functional Chinese ethnographic video case CD-ROM. Since this was the first time we produced a non-English title, we wanted to see if the functions would work in a different language operating system and how we could improve the CD-ROM. We also wanted to find out if this new method of instruction could successful transfer across different cultures, languages, and technologies.

The third group of stakeholders was teachers of the Chinese language in

secondary schools who were the primary end-users of the CD-ROM although teachers across the curriculum and grade level, teacher trainers, student teachers, and school administrators could also use the CD-ROM for various training and learning. We also wanted to know whether the CD-ROM appealed to these end-users and if they thought it would help them gain new knowledge about teaching and learning.

Purposes

To gain a better understanding of how its users perceived the program and to form a basis for future evaluations, we established three purposes:

1) To develop an Ethnographic video case (EVC) CD-ROM of three Chinese teachers teaching the Chinese language in secondary school classrooms in China according to a thinking-skill model developed by Dr. Lin Chongde called "Five Traits of Thinking."

2) To obtain formative data for fixing and improving the CD-ROM. (This was also the focus of the evaluation, although it was not our intent to make judgements based solely on these opinions.

3) To find out the feelings of the users toward this new method of instruction: Did they think the ethnographic video cases could help them apply thinking skills in Chinese language instruction? And did this new method of instruction appeal to them despite differences in language, culture, and technology?

Literature Review

Because of the international nature of this project, background literature is provided before to the formal literature review to inform readers about the background of Chinese education. A literature review for instructional development projects generally

covers three areas that of instructional materials, content research, and instructional theory. For this project, the instructional materials are the ethnographic video cases; the content research focuses on thinking skills in learning, and the instructional theory centers on constructivism in instructional design. Research in these areas should not only avoid duplicating what has already been done, but provide important information to make "the best use of program research and evaluation data that have been collected on the topic of the proposed instructional product" (Osguthorpe, 1985).

Background Literature

To better comprehend the needs of teacher education in China, a basic understanding of its historical and technological background and that of its current educational systems is necessary.

Historical background. For thousands of years, teaching has been regarded as one of the noblest occupations in China. Traditional proverbial sayings such as "A teacher for a day, a father for a lifetime" and "when three men walk, one must be my teacher" have been passed on from generation to generation. They illustrate a common respect for teachers and learning in China. As the great exemplar of master teachers, Confucius has been regarded as a sage for generations.

However, this respect for teachers took a dramatic turn during the so-called Cultural Revolution (1966 to 1976). During this period, political campaigns mobilized youths to overturn or destroy anything that resembled the old society. Young people were taught that the Communist party should take precedence over their parents; illiteracy was a virtue; education could be better obtained through farming than through formal schooling, and teachers could be considered "cast enemies." During the peak of

this movement (1966 to 1970), formal schooling basically ceased. The contemporary educational system was labeled as "bourgeois, revisionist, or counter-revolutionary" (Ashmore & Cao, 1997). Teachers at all levels were publicly humiliated and persecuted. As a result, the quality of teachers in China decreased dramatically.

Since the end of the Cultural Revolution in the late 1970s, the lack of qualified teachers has become apparent. Ashmore and Cao (1997) indicate:

> As a result of the Cultural Revolution, when diplomas were issued without the appropriate qualifications, a large number of teachers do not meet these standards. According to the Department of Planning and Construction of SEDC (1994), only 85% of the elementary school teachers, 60% of the junior high teachers, and 51% of the high school teachers are classified as "qualified" teachers. (p. 42)

In recent years, there have been a series of significant reforms. These reforms include mandating nine years of compulsory education for every child, decentralizing the administration of education, developing vocational and technical schools, restoring the nation's respect for teachers, and improving teacher treatment. However, major problems with the educational system are yet to be solved (Li, 1999). As the State Department indicated in the approval notice of the Education in the Twenty-first Century plan, the education standard of China is still low, and the current educational structure, system, concepts, and methods fail to cater to the needs of modernization (Department, 1999).

Therefore, the Education in the Twenty-first Century plan is to revitalize the educational system. As part of this plan, this project focused on developing a tool that would aid in the training and retraining of China's eleven million teachers. It should yield data and insights that would help future decision-makers decide how to use

technology and distance education for teacher development.

Technology background. Education is one of the keys to China's technological development. As the government has emphasized, "We must make education a strategic priority because it is of fundamental importance to China's modernization drive to raise the ideological and ethical standards of the entire population and its scientific and educational levels" (Council, 1993). Technology can also play a vital role in enhancing educational development. Currently, satellite television is used extensively for teacher training and other educational purposes. Some see integrating it with the existing correspondence education as a way to help train unqualified teachers (Ashmore & Cao, 1997).

In recent years, the increasing use of multimedia/hypermedia in education has ignited great excitement among many educators. As Thomson, Simon, and Hargrave (1996) observe:

> Hypermedia systems allow huge collections of information and a variety of media to be stored in compact forms and accessed quickly and easily; thus, diverse and comprehensive materials can be delivered to learners. In addition to large quantities and types of information, hypermedia environments offer learners an opportunity to explore in their own way and learn with their own style; these environments offer learners a type of intellectual freedom never before possible. (p. 53)

This type of system has an added advantage for teacher training in China because of its ability to provide consistent quality education to large audiences. In 1997 there were an estimated 11.4 million full-time K-12 teachers (Ministry of Education, 1997).

Although the Ministry and some normal universities may have advanced techniques for teaching and learning, they face difficulty in dispersing them successfully among large numbers of teachers. Multimedia systems, however, can provide a higher level of consistency in teaching and learning through the use of a consistent interface and content.

Some may argue that multimedia tools are difficult to implement in China because of the scarcity of computers. While it is true that computers are more common in urban schools, their presence is rapidly increasing across the nation as their prices go down. Many large corporations have generously donated their used computers to schools in rural areas that otherwise would not be able to afford a computer. As this CD-ROM was developed, its hardware requirement was minimized so that schools could use it on older computers.

Besides, it is important for teachers to start feeling comfortable using technology because it will play an increasingly significant role in schools of the future. The government is also requiring teachers to learn more about technology (Commission, 1993).

Current educational systems. One of the main goals of the "Yuan Ding" Project is to raise the qualifications of all teachers (Ministry of Education, 1999b) because so many of them are now underqualified (Ashmore & Cao, 1997). Present regulations require that an elementary school teacher have at least a normal school diploma; a junior high school teacher a normal college diploma; and a high school teacher a bachelor's degree from a normal or regular university (see Table 1). Once an individual graduates from a university, he or she is qualified to teach at any level in the Chinese school system regardless of whether the individual has received any training in teaching. Such

regulation allows more university graduates to enter the teaching field, but it also increases the needs of teacher training.

Table 1:
Regular institutions for preservice teacher preparation in China

Institute	Length of program (yr.)	Entrants	Prospective teachers	Degree
Normal University	4	High School Graduates	High School Teachers	BA or BS
Vocational Normal College	3-4	High School Graduates	Junior High and High School Teachers	BA or BS
Normal College	2-3	High School Graduates	Junior High Teachers	Certificate
Normal School	3-4	Junior High Graduate	Elementary School Teachers	Certificate
Special Education Normal School	3-4	Junior High Graduate	Special Education Elem. School Teachers	Certificate
Preschool Normal School	3-4	Junior High Graduate	Kindergarten Teachers	Certificate

Source: (Li, 1999; Center, 1999)

Chinese schools are structured much like the American system, which consists of three levels: elementary, junior high, and high school for a total of twelve years. There are five-year elementary schools (35%) and six-year elementary schools (65%). Most of the junior high schools (98%) are three years and only a few are four years (2%). Time spent in elementary and junior high school must total nine years. This schooling is free but compulsory. High schools are always three years (Center, 1999).

The historical and technological backgrounds, and an overview of the Chinese educational system help one understand the rationale and relevancy of the current project.

Instructional Materials Review

The purposes of this review are to make certain that "the proposed instructional product has not already been developed" and to "build on existing instructional approaches by gaining a broad understanding of presently available teaching materials" (Osguthorpe, 1985).

One of the emerging instructional models in teacher education has been the use of case studies based on sound educational principles and theories (Andrews, 1997; Barnett, 1991; Doyle, 1990; Ertmer & Russell, 1995; Jin, 1996; McCammon, Miller, & Norris, 1997; Norris & McCammon, 1996; Richardson, 1997). These cases "provide opportunities for inquiry—inquiry bounded by experience, framed by theory, generating possibilities, and informing practice" (Harrington & Garrison, 1992). When applied using multimedia technology, such cases become powerful instructional tools that allow users to reflect on, analyze, and construct teaching and learning (Claudette, 1998; Galbraith, 1996; Harris, 1994; Jarz & others., 1997; Norris & McCammon, 1996).

Video cases in general are dynamic types of cases that not only provide a description of what happened in a particular situation, but also allow users to see how it happened. They are powerful tools for instructing teachers (Copeland, 1993; Galbraith, 1996; Harris, 1997). Previous studies of video cases have used both linear and nonlinear videos. Linear videos are ordinary videotapes that deliver a linear video performance. Nonlinear videos are videos delivered via electronic means such as laser-disc, CD-ROM, DVD, and the Internet. They allow users instant access to a certain point of the footage. These studies include production studies, outcome studies, and cognitive tool studies.

Production studies. The term production studies refers to studies that focus on

the production process of video cases. Stephens and others (1999) suggest a six-step procedure: (1) determine a purpose and format, (2) schedule time for design and development, (3) select a mode of delivery, (4) examine cost of production and replication, (5) investigate copyright and other legal issues, and (6) evaluate the product. These six steps provide important guidelines for instructional designers and educators in producing video cases.

Another study related to this area contributes insights about video recording in ethnography settings. It discusses operational issues such as whether the researcher should be present at the time of the recording and whether this presence creates a distraction which confounds results, participants' awareness of the camera, privacy of the participants, the quality of the recording, and the scheduling of participant interactions (Iino, 1998).

Outcome studies. Outcome studies have focused on how video cases help achieve the targeted learning outcomes of student teachers. The common procedure in these studies was to (1) gain a general understanding of teachers' needs, (2) develop video cases, (3) have the students use these cases, (4) collect data, and (5) report on the result (Claudet, 1998; Stephens, Leavell, Fabris, Buford, & Hill, 1999; Strickland & Doty, 1997). Stephens's (1996) study, for example, focused on the effectiveness of using video cases in teaching the "workshop approach" in English language arts classes. Researchers observed twenty-nine preservice teachers using twenty-three mini video cases featuring three experienced middle school teachers using the workshop approach with their students. The observation process lasted eight weeks. The data collection methods included videotaping, transcribing the videos, making presentations, distributing

questionnaires, and conducting interviews. Results indicated a significant increase in students' knowledge of the workshop approach.

Cognitive tool studies. Cognitive tool studies have focused on studying the effects of video cases on the cognitive processes of student teachers. These processes include evaluating (Ingle, 1984; Rowley & Hart, 1996; Wojcik, 1993), reflecting (Collins & Brown, 1986; Hannah, 1995; Hansen, 1994), examining perspective (Rand, 1998), and thinking (Copeland, 1993). Studies in this area seek to understand the thinking of the users as they watch video cases, with emphasis on how they compare other people's styles of teaching with their own.

Production, outcome, and cognitive tool studies, as explained above, have provided information about why and how to produce and use video cases. However, these studies have not examined ways to improve the foundational structures of the video cases. They basically used the video cases without examining any structural alterations that could enhance their power. As Kozma (1994) indicates, since some kinds of media serve different educational purposes better, researchers should study how media can improve student learning of certain tasks in specific situations.

The current project has built on existing practices, allowing users to build their own cases and providing additional functionality to enhance the learning experience. We used the name Ethnographic Video Cases to emphasize the ethnographic nature of the cases. Rather than asking people to "act out" ideal teaching and learning scenarios, we recorded authentic classroom activities in unrehearsed situations. This work is based on over a decade of research and development by Dr. Carl Harris and others (Harris, 1999).

Content Research Review

The Video Case Study CD-ROM has an open design. It is not limited to any particular educational contents or concepts but acts as framework that allows topics to be plugged in across all content areas. Because of the needs of the stakeholders (see Stakeholder Description and Purposes), the content of the video cases in this project focuses on developing thinking skills in Chinese language classes which are themselves based on a thinking skill model developed by Dr. Chongde Lin, called "Five Traits of Thinking." This model classifies the thinking traits of a person into five areas: logical, flexible, creative, critical, and fluent thinking. It argues that focusing classroom activities in these five areas will stimulate students' thinking and help them become more effective in intellectual activities. This method has helped improve students' academic performance in previous studies (Lin, 1992). Traditionally, Chinese teachers have paid little attention to developing students' thinking skills. Hopefully, videos showing how some teachers do promote these skills will enhance others' use of these methods.

To understand the project, the Five Traits of Thinking should be defined. Logical Thinking refers to mental ability in reasoning and making inferences. Flexible Thinking means the capability to adapt readily to any new, different, or changing requirements. Creative Thinking is marked by the ability to create. Critical Thinking refers to metacognitive analysis and control of one's own thinking. Fluent Thinking refers to the spontaneity of an individual's thinking (Lin, 1992).

Lin (1992) argued that to help students learn more efficiently, classroom instruction should involve activities that enhance each one of the thinking traits. To develop Logical Thinking, classroom activities should allow students to observe

holistically, analyze, and generalize information from natural phenomena and real-world situations. Students should acquire the ability to maintain consistency between personal viewpoints and observed data, use obtained data in their arguments, and express information in a detailed, accurate, and structured manner. In developing Flexible Thinking, classroom activities should encourage multiple ways of expression, observation, analysis, and organization. Students should develop opinions that are precise and adaptive but not extreme or farfetched. To enhance Creative Thinking, teachers should encourage students to use authentic materials, to develop the desire to be unique, and to formulate their own personality and style in language expressions. To develop Critical Thinking, teachers should encourage students to evaluate their own learning. In a writing class, for example, students should learn to edit their own essays, summarize their own writing experience, identify weaknesses in essays, and set up goal-oriented training for improvement. Fluent Thinking requires teachers to provide timed activities for the students so that students can learn to think quickly.

The Five Traits of Thinking provide a foundation of content for the video cases and their commentaries. Users of the CD-ROM can see in the video cases diverse illustrations of the same thinking traits or principles taking place in real classrooms. Thus they are able to gain a thorough understanding of the theory by examining it from a variety of perspectives.

Instructional Design Theory Review

The ethnographic video cases provide an environment in which users are exposed to new knowledge by observing theories put in practice in real classrooms. Users are free to choose how they will interpret and apply this new knowledge to their own teaching.

Their judgement is partially manifested and enhanced by their construction of new meanings using the "Evaluation Room" function. In many ways, the ethnographic video cases are developed using a constructivist's approach (Harris, 1999).

Therefore, to further strengthen the theoretical foundation of this project, a constructivist instructional design theory was needed for developmental guidance. As Reigeluth (1997) indicates, instruction is "anything that is done to help someone learn," and instructional design theory is "anything that offers guidance for improving the quality of that help." A theory that could provide such guidance was Black and McClintock's Study Support Environment Theory.

Black and McClintock (2000) indicated, "Study is a key concept in making [instructional] design more fruitful in education." They defined "study" as the process of constructing knowledge, a term preferred to "learn" in describing what students should do. Instructional design, therefore, is about "designing Study Support Environments (SSEs) instead of 'instructional systems' or 'learning environments.'" Such an approach allows users to create "a place for study in a world of instruction environments" (McClintock, 1971). An effective instructional design of a SSE must "[foster] the construction of interpretations based on observations and background contextual information" because "the basis for cognition (and being in general) is interpretation based on background knowledge and beliefs." The hermeneutic activity of constructing interpretations is the heart of "study." "Hermeneutics as a field focused initially on interpretation of texts, but has broadened to interpretation in general" (Black & McClintock, 2000). Research has repeatedly shown that understanding requires a lot of inferences (Black, 1984; Black, 1985).

Black and McClintock further explain the framework for SSE design, which is called the Interpretation Construction (ICON) Design Model. This model includes the following seven principles:

1. Observation: Students make observations of authentic artifacts anchored in authentic situations.
2. Interpretation Construction: Students construct interpretations of observations and construct arguments for the validity of their interpretations.
3. Contextualization: Students access background and contextual materials of various sorts to aid in interpretation and argumentation.
4. Cognitive Apprenticeship: Students serve as apprentices to teachers to master observation, interpretation and contextualization.
5. Collaboration: Students collaborate in observation, interpretation and contextualization.
6. Multiple Interpretations: Students gain cognitive flexibility by being exposed to multiple interpretations.
7. Multiple Manifestations: Students gain transferability by seeing multiple manifestations of the same interpretations. (Black & McClintock, 2000)

In researching and developing video case studies, these principles can be valuable guidelines. The ethnographic video cases fulfill these design principles in ways that allow users to observe "authentic [video] artifacts anchored in authentic situations," and they provide a mechanism for users to "see how the theory of active learning looks when implemented in living classrooms" (Harris, 1997). Along with each of the video clips are commentaries by the teacher in the video, by other educators, and by authors of related

professional literature. These commentaries furnish multiple interpretations from varied perspectives on the contextual base provided in the classroom situation, allowing users to develop a deeper understanding of the research foundations of the videos. On the same CD-ROM, we used multiple video cases that exemplified the same principles to increase transferability. Because users could build their own cases using the raw video clips provided, they could construct their own interpretations and arguments for validations. In the CD-ROM, we also provided a link to our internet site on which forums were setup for users to collaborate with each other and with other stakeholders (including the author) to enhance their understanding and application of what they had learned. Teacher trainers such as university professors, school administrators, senior teachers could use these CD-ROMs to facilitate studying through cognitive apprenticeship.

Structure of the CD-ROM

The Ethnographic Video Case CD-ROM consists of an introduction and three main parts: (1) Exploration, (2) Creation, and (3) Supporting Functions. When a user inserts the CD-ROM into the computer, the introduction launches automatically. It contains music, animated photos, and a title screen to catch the user's attention, and it provides other basic information, such as the title of the CD-ROM, copyright statement, and names of the author and others involved (Figure 1). This information is in both Chinese and English. As the animation starts, there is a statement at the bottom of the screen reminds users that they can click the mouse pointer to skip the entire introduction.

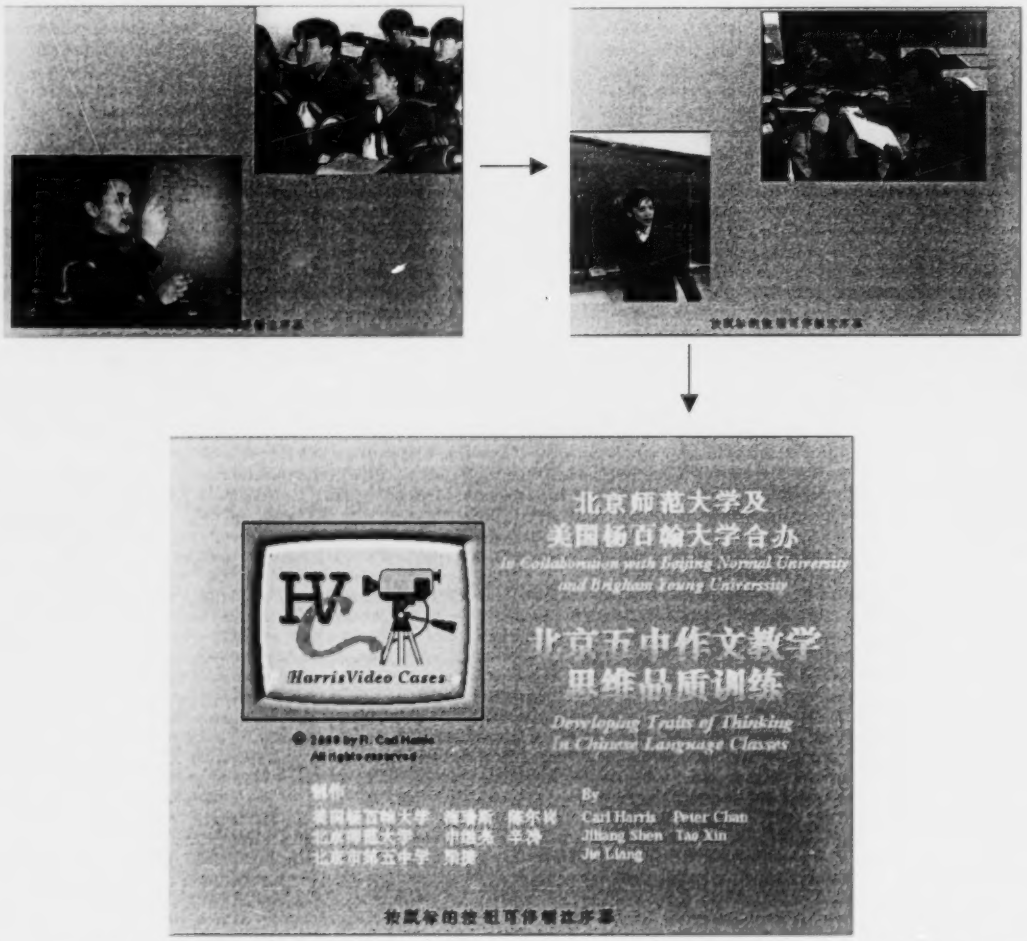

Figure 1: Introduction screen: Photos from the video cases move across the screen along with upbeat music. Then the title screen appears with some basic information about the CD-ROM in both Chinese and English.

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Part 1: Exploration

This part of the CD-ROM includes three navigation buttons. Each button launches the exploration of a specific case study of a teacher teaching the Chinese language using Lin's thinking skill model (Figure 2). Although each teacher uses the same model, they all have different approaches to its application.

Once a user presses a navigating button, six "probe" buttons will appear on the right. Five of these buttons represent the five traits of thinking, and the remaining button represents an overall view of the case (Figure 2). When one of these five buttons is pressed, a video clip will automatically start showing classroom activities that illustrate a particular thinking trait. A video slider is located at the bottom of the video screen so that users can slide to any part of the video when they choose to repeat part of it.

At the bottom of the display are the commentaries on what happened in the video clip. The commentators include a senior teacher, an expert in thinking skills, and authors of professional literature. Each of the commentaries is in both audio and text formats. The text is an exact replica of what is said in the audio. Providing both audio and text versions of the same materials allows users to enhance their understanding by using different senses simultaneously. They can also copy the text materials for their own reference or for reports. For the professional literature, the process is reversed. We invited a professional narrator to read literature related to a specific thinking trait. When the sixth "probe" button is pressed, all video clips of that case play consecutively, and the commentaries are furnished regarding the whole case. The same operations can be found in each of the three cases in the exploration part.

中学作文教学
Three Navigation Buttons
Video Screen
Audio button for the commentaries
Six probe buttons
Movie slider: It allows users to go to any point of the video instantly.
Four sources of commentaries: users select a new source of commentary by clicking on a different tab.

Figure 2: Exploration. By clicking one of the three Navigation buttons, the user will be able to use six probe buttons on the right. Each probe button has a video clip illustrating a thinking skill along with four sources of commentaries about the clip.

Part 2: Creation

The second part of the CD-ROM allows users to create their own Ethnographic Video Cases by manipulating the provided video clips into any desired order and commenting on what they perceive to happen in these clips (Figure 3).

This part includes two main buttons. One button, the "Editing Room," allows users to select and view up to eight video clips out of sixteen from the three cases. They can arrange these clips in any sequence they desire. They can save the sequence on the hard drive or on other storage devices (e.g. a floppy disk, zip disk, etc.). The other button in this part of the CD-ROM, the "Commentary Room," allows users to type out their

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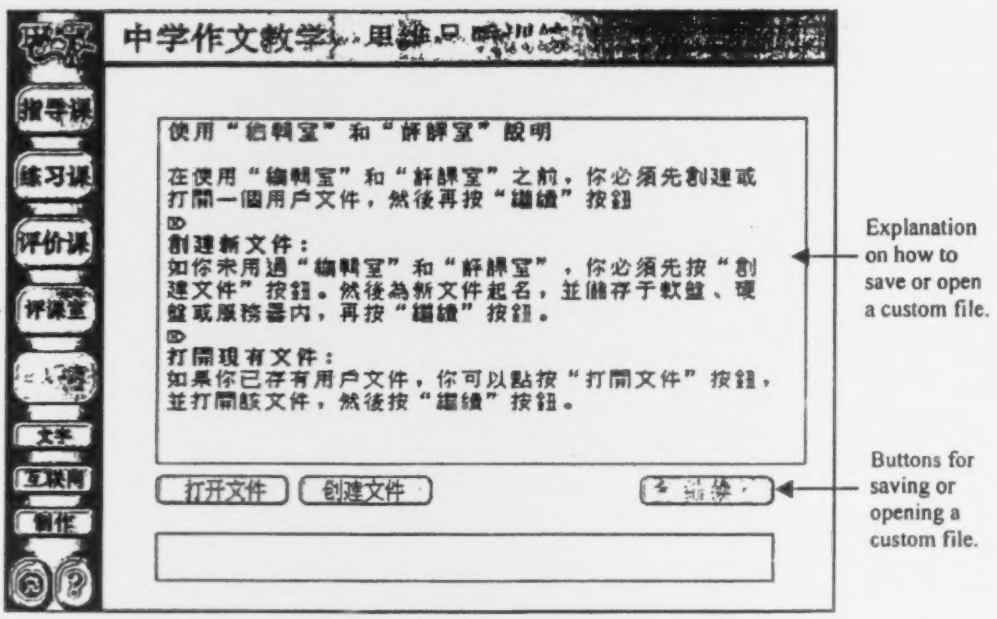
comments for each of the clips that they select. Besides the eight clips they have selected, they can view all video clips by clicking on an additional button, and type their comments in Chinese or English. After they finish, their comments are saved automatically.

There are numerous ways to use this part of the CD-ROM. It can be used as a referencing tool on which users can record their reflections, comments, elaboration, and ideas concerning what they have studied in the Exploration part so that they can refer to them. It can also be used as a teaching tool, as users add their insights for sharing with and training other teachers. Other uses may include researching, demonstrating, building theory, enhancing recall, etc.



By clicking the "Editing Room" button, the user will receive instructions on how to create a new custom file or open an existing one.

Figure 3. (Continue on next page.)

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Users drag a maximum of eight clips to these blank boxes in any sequence they want.

Video screen showing one of the 16 clips.

These sixteen pictures represent sixteen video clips. Users can watch these clips by clicking on them. To select a particular clip, they drag it to the upper palette. In this example, five clips have been selected.

After creating a new custom file or opening an existing one, the user can start watching and selecting from the 16 video clips in the "Editing Room." When finished selecting the clips, the user needs to save this sequence of video clips.

Users can type in their comments here in Chinese or English. They can also copy text from some other places and paste here.

The selected clips become buttons in the "Evaluation Room." When the user clicks one of these buttons, the video clip will play automatically, and users can enter their comments at the blank space below.

Users can save a number of different sequences of the video clips for different purposes.

After "editing," or selecting a sequence of video clips, the user can "evaluate," or comment on the clips by clicking the "Evaluation Room" button. Multiple sequences of video clips can be created with each sequence of video clips for different training or researching purposes.

Figure 3. Creation. This part of the CD-ROM allows users to create their own sequence of the video clips and comment on each clip that they have chosen.

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Other Functions:

Besides the Exploration and Creation parts, the CD-ROM also provides functions that make studying more effective. These functions include Text button, Internet button, Credit button, and Help button.

Text button. By clicking the "Text" button, users access collections of all commentaries in text format for the three cases of the Exploration part. This function allows users to assess the commentaries quickly for referencing and copying purposes (Figure 4).

Internet button. This button is a link to our research website on which users find other video cases, including their video, audio, and text materials. They can even build their own cases online and participate in discussion forums (Figure 5).

Figure 4. Text button. By clicking on the Text button, users are able to read all the text materials in the commentaries.

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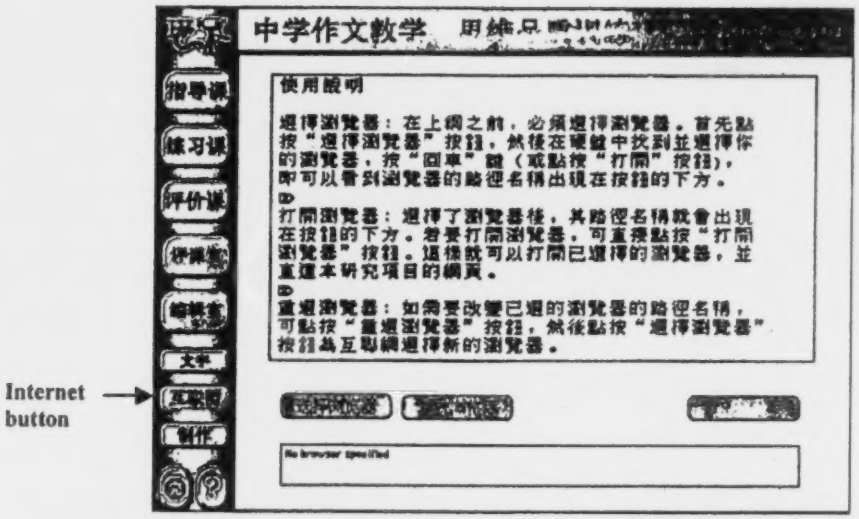

Figure 5. Internet button. By clicking the Internet button, users will receive instructions on how to launch the browser that will bring them directly to the ethnographic video case website.

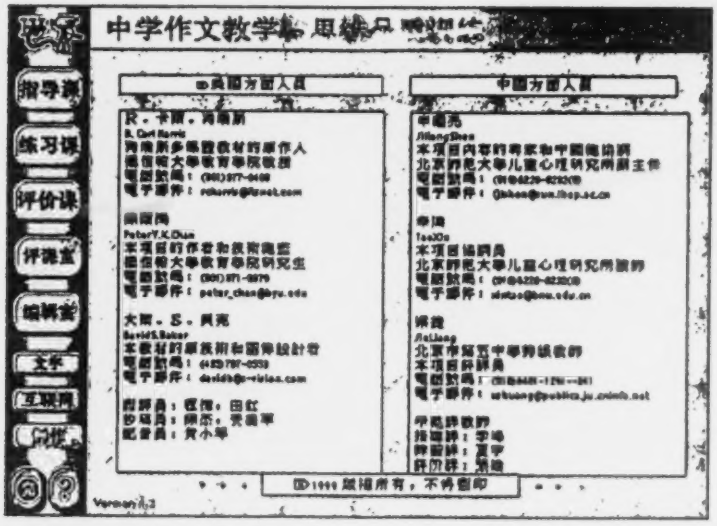

Figure 6. Credit button.

Credit button. This button allows users to contact those who are involved with the project (Figure 6).

Help button. By clicking the help button, users can find text explaining the main functions of the CD-ROM. In addition, we have provided two animated tutorials to teach

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users how to use the CD-ROM (Figure 7). The first animation button gives them a tutorial on how to use the Exploration part, and the second button explains how to use the Creation part.

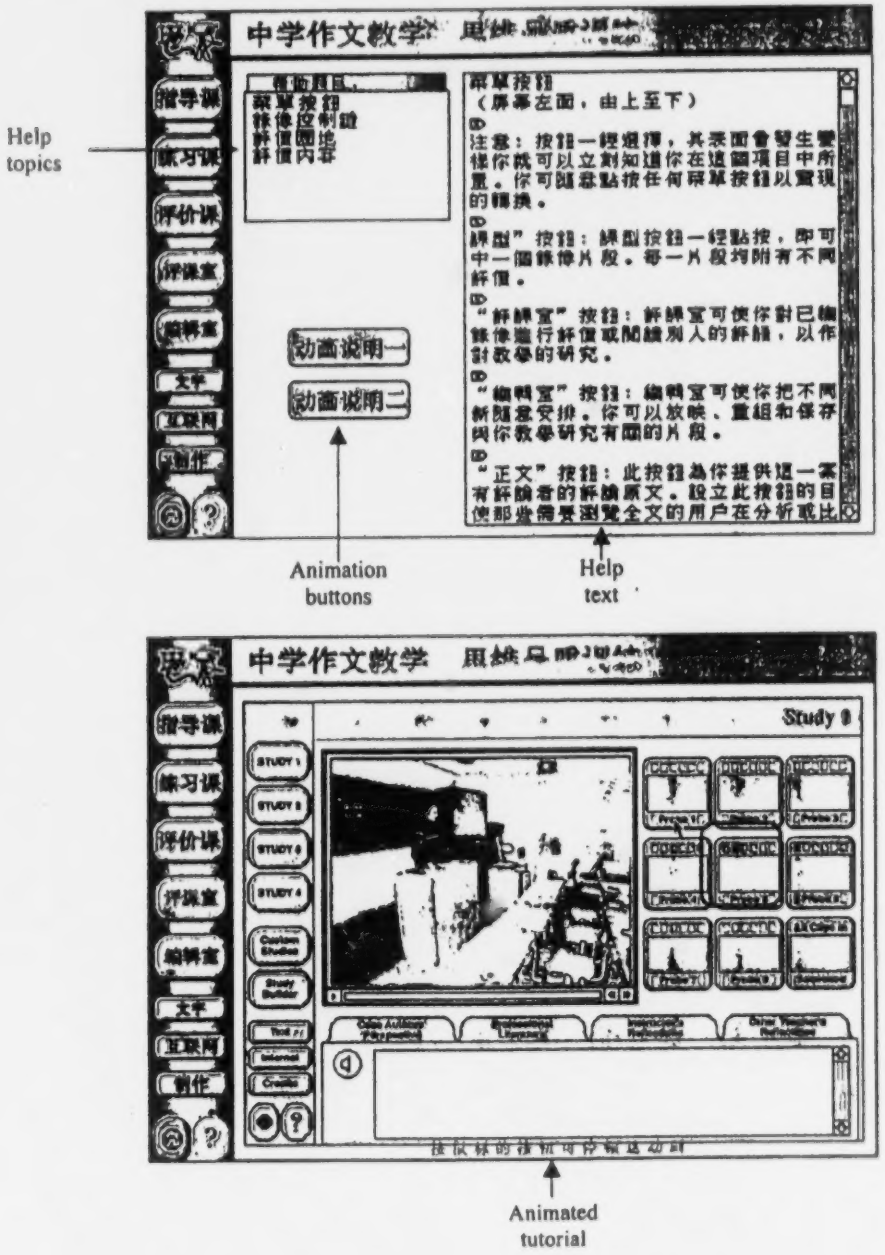

Figure 7. Help button. The users can find text help and two animated tutorials by clicking the Help button.

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Evaluation

Evaluation of an instructional product involves a "systematic collection of information for the purpose of informing decisions to design and improve the product" (Flagg, 1990). In this project, we used a number of methods to collect data during a pilot study of the program. These data helped us improve the CD-ROM and obtain a basic understanding of its merit.

Procedure

The main evaluation of this program occurred during its pilot study in Beijing in which ten targeted end-users used the CD-ROM extensively. However, before the main evaluation, a one-on-one preliminary evaluation was conducted to provide some basic information to prepare for the pilot study (Gagne, Briggs, & Wager, 1992). In this preliminary evaluation, I asked a Chinese graduate student in the Department of Instructional Psychology and Technology of Brigham Young University to use the CD-ROM while I observed him. He was able to help me find a number of defects, which were then fixed before multiple copies of the CD-ROM were made for the pilot testing. These defects included typographical errors in the title screen and in several commentaries, and video clips that started a little too late so that the beginning frames needed to be edited out.

After fixing the defects found in the preliminary evaluation, twenty copies of the CD-ROM were produced for the pilot study. In the pilot study, ten secondary Chinese language teachers were asked to use the CD-ROM thoroughly for four days. These teachers had enrolled in an inservice training program offered by a normal college. They were all female, which most Chinese language teachers are. The study was conducted at

Beijing No. Five Secondary School in China, and the subjects came from three different secondary schools in the area. They represented the primary end-users of the CD-ROM (see Stakeholder Description). The pilot study consisted of four sessions. In the first three sessions, subjects watched the three video-cases of Chinese language teachers. The video cases showed different teachers applying the same thinking skill theory in different ways (see Purposes). By a variety of applications, subjects could better transfer their understanding from one situation to another (Black & McClintock, 2000). The last session required them to build their own cases using the features in the CD-ROM. This allowed them to "construct interpretations of observations and construct arguments for the validity of their interpretations". Below are the detailed descriptions of each of the four sessions:

Session one. In Session One, the subjects were asked to explore the first video case of the CD-ROM. A written instruction sheet was intended to provide the users some basic guidelines on how to use the CD-ROM. However, at the time of the pilot study, this instruction sheet was not yet completed, so oral instruction was provided instead. I told them briefly that the CD-ROM allowed them to critically observe how other teachers teach the Chinese language. Then I showed them how to use the functions by clicking the mouse. This introduction lasted for about eight minutes. After that, they were left to explore the video clips and commentaries in the first case by themselves while my fellow researchers and I observed and stood by to provide assistance when needed.

During this exploration process, the teachers voluntarily recorded some information from the CD-ROM in their personal notebooks. When they had questions, they asked one of the researchers present, either Dr. Carl Harris, Dr. Melanie Harris, Dr.

Shen Jiliang, Dr. Xin Tao, or myself, all of whom had prior experience in using the CD-ROM. There was always at least one of the researchers present during the entire pilot test.

When they had finished this exploratory process, they were asked to answer three written questions. Answering these questions helped them reflect on what they had just observed and provided a way for us to see how they felt about the materials. These three questions were as follows:

1. What do you do that is the same as the teacher in the video? Why?
2. What do you do differently? Why?
3. What would you change or improve in your classes? Why?

After answering the questions, the subjects had an interview or group discussion about what they had experienced. They were given opportunities to point out strengths and weaknesses of the CD-ROM and to call attention to any defects that they felt needed to be corrected. Because most of the participants did not come and leave at the same time, we often needed to go through this interviewing or discussion procedure several times a day. The average time for finishing the entire sequence of Session One was three hours, and most of the participants started and finished exploring the first video case on the first day.

Session two. Session Two involved basically the same process as Session One; the only difference was the content. In Session Two, the participants explored the second case. They answered the same three questions when they had finished, and they participated in an interview or a discussion about the new things that they had learned. The average finishing time was a little shorter than three hours, and most participants

finished Session Two on the second day.

Session three. This session was basically the same as the previous two sessions, except that participants observed the third teacher. Most of the participants finished the whole process in about two and one half hours on the third day.

Session four. In this session of the evaluation process, participants used the "Creation" features of the CD-ROM. We first gave them a brief seven-minute introduction to these features and then asked them to create a video case about creative thinking in a Chinese language class using video clips from the CD-ROM. We told them that when they had finished creating the case, they would need to teach each other about creative thinking, and when they returned to their respective schools, they should teach other teachers using the same materials. We also told them not to use the video clips that had already been used in the CD-ROM to illustrate creative thinking. We wanted them to have a real audience in mind for their authentic creation of a new video case.

After the introduction, they started creating their own cases. After they finished, they taught each other about creative thinking using these new cases. Then we had final discussions about various aspects of the whole project. Nine out of the ten participants finished each session of the pilot study in one day. However, one participant started on the third day, and she spent about six hours on the third and fourth days to finish the four sessions.

Evaluation Methods

In this evaluation, we used a triangulation approach, employing a number of measures for the same phenomenon (Webb, Campbell, Schwartz, & Sechrest, 1966). These measures helped to cross-validate the findings and to reduce uncertainty in

interpretation (Flagg, 1990). They provided valuable information that helped the researchers determine how to improve the CD-ROM and enabled us to assess how well it had worked (Gagne et al., 1992). These measures included focus groups and interviews, artifacts, observations, self-reports, and thinkaloud.

1. Focus groups and interviews. Focus groups and interviews took place at the end of each session of the evaluation procedure. When two or more participants finished a session of the evaluation at about the same time, they would discuss with the researchers their experience with the CD-ROM. The researchers asked guiding questions such as "How do you feel about this part of the program?" and "What are the parts that you like or don't like?" to help them express their thoughts in a relaxed atmosphere (see Appendix A). The three reflective questions were often used as the basis for discussion. When only one participant finished a session of the evaluation at a certain time, an interview between a researcher and the participant was substituted for the discussion (see Appendix B).

2. Artifacts. In this evaluation, the artifacts were: the voluntary notes that the participants took during the exploratory processes and the individual cases that they created on the last day. At the end of the entire pilot, we made a copy of all the notes and cases they produced and examined them to see what insights they had from what had been presented.

3. Observation. Throughout the pilot testing, the researchers were observant of the participants' behaviors. We were most interested seeing how the participants used the CD-ROM, how they liked it, and what problems they might have (see Appendix C). We looked for repeated behavior patterns that might provide us information worthy of further

study (see Table 6).

4. Self-report. As stated earlier, at the end of each part of the pilot study we asked the participants to answer three reflective questions (see page 31) about what they had just learned. These were open-ended questions aimed at gathering information about their thinking and helping them reflect on their learning (see Appendix D).

5. Thinkaloud. Thinkaloud is an evaluation technique that requires the user to "verbalize [his or] her thoughts." In a typical thinkaloud session, the user may say things like "I am going to click the green button now to see what it does," "this part is too long so I am going to skip," etc while the action is going on (Flagg, 1990).

In this evaluation, two thinkaloud sessions were attempted. The first session, held on the first day of evaluation, was terminated shortly after it began because I needed to leave to help others. The second attempt was made on the third day when a new participant arrived. A video camera was set up so that the observation could continue even if I had to leave temporarily. Information obtained in this session was consistent with information obtained from other evaluation methods.

Analysis

Findings from the various evaluation methods were analyzed in two ways: through expert-reviews and through organizing the information in a way that would answer the two questions that interest the stakeholders most.

Expert review. As the author and programmer of this project, I took the roles of both a utilization expert and a media expert to review the information that we had gathered (Flagg, 1990). Ideally, such review should be done by a third person to avoid bias, but this was impossible due to limited funding. This review identified the defects of

the CD-ROM and its areas for improvement. The result was the generation of four tables (Tables 2 through 6): a Thing-To-Fix list, a Thing-To-Improve list, Computer Specification Comparison, and a table showing Observed Behavior and Implications for Formative Purposes. Findings from this analysis helped fulfill the second purpose of the project.

Utilization-focused questions. Findings were organized to answer the two questions the major stakeholders had. These questions focused on how users perceived the CD-ROM. Findings from this analysis helped fulfill the third purpose of this project. The questions were:

1. How well does the method of using ethnographic video cases transfer across different languages, cultures, and technology?
2. How well do the features of ethnographic video cases support teachers in learning to apply thinking skills in Chinese language instruction in China's secondary classrooms?

Findings

Findings from the evaluation were organized according to the two analyzing processes rather than the evaluation methods because findings from one method often overlapped the findings from other methods. For example, a user in the thinkaloud session expressed that she was reading the commentary as she listened to it; we noticed the same behavior in other users; during focus groups, the users indicated that they liked to read along because it helped them better understand the commentary. In this case, the thinkaloud, observation, and focus group methods all had similar findings. Therefore, it

was impractical and less useful for us to categorize the findings according to the evaluation methods.

Findings from Expert-Review. Data collected in this part of the evaluation comprised four lists: a things-to-fix list, a things-to-improve list, a computer specification list, and a list of observed behaviors. The first list showed the defects of the CD-ROM identified during the pilot study (Table 2). The defects they found were not critical and posed no major threats to the functionality of the CD-ROM. However, they needed to be fixed to achieve a complete and professional program.

The things-to-improve list included things that participating teachers and researchers wished to change to improve the quality of the CD-ROM (Table 3). The items on the list are expected to change as the development of the Ethnographic Video Cases continues.

Table 2:
The things-to-fix list

	Text Changes:
1.	Study One - Probe One - Self-Commentary: Extra text needs to be deleted.
2.	Study One - Probe One - Self-Commentary: Text is too close to the right edge.
3.	Study One - Probe One - General Commentary: There is an extra symbol that needs to be deleted.
4.	Study One - Probe One - Peer Commentary: Delete extra text "7b"
5.	Study One - Probe One - Expert's Commentary: Delete extra text "7b"
6.	Study Two - Probe Five - Expert's Commentary: The text looks strange on the Mac. All texts need to be proofread again on the PCs.
7.	Users cannot type Chinese at Study Builder (Editing Room) and Custom Study (Evaluation Room) on some computers.
	Graphic Changes:
8.	In the "Evaluation Room," some probe buttons are not completely aligned. The messages inside the yellow pop-up indicators need to be changed into Chinese.
	Programming Changes:
9.	The Chinese code needs to be changed from Big5 to GB so that an additional decoding program like NJStar is not required.
10.	The "All Clip" button in the "Evaluation Room" needs to point to a constant source of video footage.

Table 3:
The things-to-improve list

	Minor Changes
1.	The Credit Page needs to be improved. (It looks bad.)
2.	Graphics in the animated tutorial should be in Chinese.
3.	The character for the Stop Button should be changed from " 完 " (Wan) to " 停 " (Ting) for clarity.
4.	Redo the cartoon used in Study One - Probe One for clarity.
5.	Redo the video news report to improve the video quality.
6.	Name or number the clips in Study Builder (Evaluation Room).
7.	Add narration for Literature at each probe.
8.	Change the icon of the CD on the PCs
9.	Create graphics for the CDs and jewel case covers
	Major Changes
1.	Commentary: The audio in the commentary needs to have a control bar so that it can rewind and forward like the videos.
2.	Tutorial: The animated tutorials also need a control bar.
3.	Buttons: Create pop-up statements telling users the functions of different buttons.
4.	Copy & Paste: There needs to be some instructions on how to copy and paste in the Evaluation Room; otherwise, users may not know these functions exist.
5.	Learning Guide: A learning guide should be created to tell users how to use the CD-ROM and how to achieve the best learning results. Because Chinese teachers are used to more structure, they might prefer having some guidelines to help them adjust to the more constructivist way of learning with the CD-ROM. These guidelines should also include reflective questions about the content, users' own teaching, applications, and so on to help users reflect.
6.	Video Length: The maximum length of video on a CD using the current setting is supposed to be 56 minutes (see table 4). However, with the files for the interface and commentary, the hard disk space holds only about 35 minutes of video. Although participants in the pilot study did not express concerns about this limitation, we should still continue to find ways to increase hard disk space.
7.	Title page: Create a title page that will automatically pop up when the users insert the CD-ROM. The title page should have the following buttons: 1. "Start the program now with the introduction." 2. "Start the program now without the introduction." 3. "Install Quick Time -- You need to install the correct version of Quick Time in order to see the video and listen to the audio." 4. "Install NJStar -- If you have a problem reading the Chinese characters, you may need to install this program."

After the pilot study and discussions with the major participants in the project, we decided to stay with the current production setting rather than upgrade the CD-ROM to the latest version or convert the delivery medium to the Internet. Although the current setting contains a shorter video, it requires very little computer hardware to run. It can run on a 486 PC, whereas the latest version would require a 200meghtz Pentium computer with Windows 98. We hope to allow rural schools with older computers to make use of the CD-ROM. Table 4 is a comparison of the computer specifications between the current version of the CD-ROM and the latest version, which is mainly used in the United States.

Table 4:
Computer specifications comparison

	The current version	**The latest version**
CD-ROM Version	1.0	2.5.3
Authoring Software: Macromedia Director	Version 6.0	Version 7.02
Video Compression Codex	Cinepak	Sorensen
Video Playback Software: Quick Time Player	Version 3 on Mac / Version 2.1.2 on PC	Version 4 on both Mac and PC
Maximum length of video	56 minutes	125 minutes
Minimum CPU required	486 on PC / PowerMac	Platinum 200 with Windows 98 / PowerMac G3
Minimum RAM required	8 M	32 M

As indicated in the method section, we observed how the ten participants used the CD-ROM throughout the pilot study. It was not easy to organize all the data in ways that would allow us to make generalization from them but we looked for repeated patterns and abstracted from them a few principles to guide future production. The principles that we generalized concerning the interface and content are stated in Table 6.

Table 6:
Observed Behavior and Implications for Formative Purposes.

INTERFACE	
Observed behaviors	Implications for formative purposes
In the beginning, only half of the participants watched the video before listening to the commentaries. Later, all of the participants watched the video before listening to the commentaries.	Participants who listened to the commentaries first thought that the audio button for the commentaries was for controlling the video clips' audio portion. They actually preferred watching the video first too. This misperception prompted us to create a pop-up indicator to show the function of the audio button.
Without exception, all participants listened to the commentaries while reading them. They indicated that doing so helped them understand and remember better.	This behavioral pattern confirmed our decision to offer the commentaries in both text and audio formats. Further research in this area may provide significant insights about people's learning preferences for audio and text information.
Most participants became accustomed to the interface within about five minutes. During this time, they explored the functions of the CD-ROM by "clicking around" with their mice. Their computer experience varied, but most of them did not use computers in their daily lives. After this short period, they used the CD-ROM comfortably. One participant took thirty minutes to get used to using the CD-ROM because she had never used a computer. She did not know how to use the "mouse" or the "buttons" on the screen, so we had to explain to her these basic functions. After this period of introduction, she was able to use the CD-ROM adequately.	This showed how easy it was for the participants to use the CD-ROM. The system allows end-users to master the content regardless of their technological background. This is especially important if we expect the system to be an independent instructional tool in the future.
CONTENT	
Observed behaviors	Implications for formative purposes
Most of the participants voluntarily took extensive notes for future reference while they were studying the cases. The only participant who did not take notes wanted to buy a copy of the CD-ROM. All participants repeated watching, reading, and listening to the video and the commentaries so that they could better understand the materials.	The note taking and the desire for repeated use of the CD-ROM materials showed us that the participants were interested in the content. Choosing content materials that expand users' knowledge for teaching will be important in the success of future video cases.

Findings from Utilization Focused Questions. One of the purposes of this project was to find out how users felt about CD-ROM. It was not our intent to evaluate the effectiveness of the CD-ROM based on user opinions of it—to adequately make such a value judgement would require a larger scale evaluation with some carefully designed quantitative measures. Rather, this part of the evaluation has set up to give us a general idea of how the users liked the CD-ROM. We thought knowing this would help us prepare for a more thorough evaluation in the future. To do so, we developed two questions to guide us in gathering information. We designed these questions based on the interests of the stakeholders and the purposes of this project (see Stakeholder Description and Purposes). The questions were:

1. How well does the method of ethnographic video case transfer across different languages, cultures, and technology?
2. How well do the features of ethnographic video cases support teachers in learning to apply thinking skills in Chinese language instruction in China's secondary classrooms?

The first question was asked because the method of ethnographic video case studies was originally developed in the United States for the American audience, and we were concerned about how well it could be used in a different language, culture, and technological and economic environment. We wanted to know whether this method of instruction could still be effective when the primary audience was changed. To answer this question, we investigated its transfer across each of the three areas: languages, cultures, and technology.

In studying its transfer across languages, we were interested to know the impact of using Chinese instead of English as the medium of instruction. Could it be used as a Chinese product? The answer is simply "yes." Throughout the pilot study we purposefully did not show any of the English CD-ROMs or mention how the materials had been translated from English to Chinese. We presented the CD-ROM as a product developed for the Chinese audience. We did this to avoid giving the impression that this was merely a translation of some American materials. The participants used the CD-ROM without any language problems. This indicated that the CD-ROM method had been transferred successfully to the Chinese language.

In studying the transfer across cultures, we needed to consider that, in China, inservice training for teachers largely follows the traditional pattern of content-focused lectures, emphasizing theories, but limiting application and participation. The ethnographic video case method emphasizes real-life demonstration, critique, and application, giving users the freedom and flexibility to choose what they learn and how they apply it. As the participants expressed, this was a new way of learning for them.

In our discussions with the participants, they expressed that they preferred this method to the traditional lectures for learning about pedagogy. With the CD-ROM, they could actually see how people apply theories and how others critiqued the videos. For them, this was a desirable change in the learning culture. They also commented that the traditional lectures could still provide theoretical information, such as definitions of terms and explanations of concepts.

However, to make this new method more effective for Chinese users, additional instructions and guidelines are needed. Cultural transfer did not come automatically. In

a typical class in a teachers' college, teacher-learners in China are usually told exactly what they need to do. Many of them are in the habit of merely doing assigned tasks required for the desired grade. This mindset influenced their behavior in using the CD-ROM. One participant commented that although the CD-ROM had been beneficial in helping her improve her teaching, she would not have used it so thoroughly if we had not required her to do so. Thus, she would have missed some important concepts. Other participants shared the same feeling.

To bridge the gap between traditional instructor-centered learning patterns and ethnographic video case learning experiences, some guidelines are needed to inform the participants how they can optimize their learning. Searching questions about the presented content, about users' own teaching, and about the application phase would help users learn more effectively. Some users found it awkward and unrealistic to teach other teachers what they had learned; in real life, such opportunities may never arise. Participants need to understand the importance of teaching as a way for them to learn the materials. Therefore, more opportunities for practice opportunities are needed in this area.

In studying the transfer across different technologies, we needed to keep in mind that equipment for computer-based instruction is not up-to-date in most Chinese schools. Therefore, we chose to produce the Chinese CD-ROM using an older version of technology so that it could run on older machines. (see table 4 for specification comparisons.) We found that although computers are not commonly used in Chinese classrooms, many schools-especially those in the urban areas-do have at least one computer with a CD-ROM drive for administrative functions. This condition suffices for

using the CD-ROM. Since it is a training tool for teachers, teachers can take turns using it even if the school has only one computer.

In answering the second question about how well the features of ethnographic video cases support teachers in learning to apply thinking skills in Chinese language instruction in secondary classrooms in China, the result was positive. All the participants indicated that they better understood the thinking skills method that they were excited to apply what they had learned in their classrooms, and that they were confident in their ability to do so. To be more specific, in evaluating how well the ethnographic video case method aids teachers in learning these thinking skills, we examined its impact in the areas of knowledge, theoretical foundation, application, pedagogical ideas, participants' own thinking, and educational beliefs.

Based on their responses to reflective questions asked in the interviews and discussions and on their written notes and custom-made cases, we concluded that participants felt that the ethnographic video cases had helped them better understand the content areas. The participants demonstrated a high level of comprehension of the thinking skills in their notes and in their answers to the reflective questions. They were able to write down the key points of the theory, the main activities in the examples, and some key points in the commentaries. In answering the three reflective questions, they were able to compare the demonstrations with their own teaching and to indicate how they were going to improve it.

The video cases also strengthened the theoretical foundation of the users. Many of them commented that the video cases had provided them with a strong theoretical foundation for their own teaching. While they found similarities between their own

classroom activities and the demonstrated activities, they often had not known the rationale for such activities or the way to conduct them successfully. They commented that as they saw how the teachers in the video cases applied thinking skills in their classes, they knew better how to organize their own lessons in a systematic fashion and why they should conduct certain classroom activities.

Moreover, the video cases enhanced users' application of the targeted educational principles. Some of them commented that when they first saw the demonstration, they didn't understand the application for their own classrooms because their students were at lower grade levels or because they thought their own students were less motivated. However, after listening to the commentaries and watching different video cases demonstrating the same principles, the participants acquired a deeper understanding of the principles and realized how they could modify the examples to apply them in their own classroom. For example, one participant indicated that she would use light music to inspire her junior high school students during their writing exercises rather than use classical music as demonstrated in the video case. Additionally, in creating their own cases to teach others, they often added their personal examples, which enhanced their ability to generalize from the cases.

All ten of the participants reported learning new pedagogical techniques from the video cases. They found the demonstrated activities refreshing. Some commented that though they may have heard of these activities, they had never seen them done before. Being able to see the demonstrations helped them recognize new possibilities for applying them in their classrooms. Some of these innovative activities included using a

cartoon or music to inspire students, having the students write a conclusion or preface for a novel, using a skit or news report to evaluate a situation, etc.

The video cases also had an impact on the participants' own thinking. As they learned how to develop students' thinking skills, the participants found themselves improving their own thinking skills. As they examined more video examples and commentaries, they started critiquing the demonstrations, and then gave suggestions for their improvement that were different from what the commentary had provided. One suggestion, for example, was to give more guidelines to the students before presenting materials such as music or a skit so that the students could better understand the activity.

In examining the effects on educational beliefs, we should consider that the video cases are different from traditional Chinese classrooms in many ways. While traditional classrooms are more rigid and subject oriented, the video demonstrations are more open and thinking skills oriented. Coming from a traditional approach to teaching, the participants experienced a change in some of their fundamental concepts about teaching. One participant indicated that in the past, she had focused on helping students do well on exams by having them memorize model essays. Such methods did not help develop students' own thinking skills. Now that she knew she should develop students' mental abilities first, she felt that their performance on exams could improve through natural, rather than artificial, means.

Others also commented that prior to the study, they had been afraid of doing anything in the classroom that was not strictly tied to the text. Now that they had seen how additional activities could be done, they were more confident about using methods that would have long-term effects on the students. As one commented, involving

students in creative activities not only did not hinder their academic progress, but actually helped them do better on exams because they had become "smarter." Students at Beijing No. 5 School, for example, were well known for their academic achievement, but they were also involved in creative activities. The students who did the skit in the second video case, for example, were some of the top students in the school.

In brief, the evaluation of the ethnographic video cases was productive in achieving the purposes of this project. It helped us prepare for future production and obtain an understanding of how the stakeholders perceived this new instructional tool.

Conclusion and Discussion

This effort to produce an ethnographic video case CD-ROM of three Chinese teachers using the "Five Traits of Thinking" to teach language in secondary school classrooms has been a success. This new tool helps teachers improve their teaching. The evaluation of the project has also provided important information about how to improve the CD-ROM and how to determine its merits. In addition, the development of this project has led to new educational collaborations between Brigham Young University and Beijing Normal University.

Though the development of the ethnographic video case CD-ROM built upon existing studies concerning why and how to develop video cases (Copeland, 1993; Galbraith, 1996; Harris, 1997; Iino, 1998), the project now provides a new interface that enhance the learning experience of its users. It is a new development in utilizing computer technology in teacher education in China and the United States. It creates a versatile environment in which users can learn by observing, listening to critical analysis, and creating their own interpretations. This combination of functions strengthens

teaching and learning in a unique way.

The ethnographic video cases have some advantages over live classroom observation. As some of the participants commented, live observation is time consuming. Teachers often need to travel great distances just to observe one class, and during a live observation they do not have the same flexibility to instantly reply, critique, and manipulate what they have observed that they do when using the video cases. Participants also indicated that they preferred the video cases to the lectures currently given in normal colleges, because of the realism and applicability of the video cases.

However, the video case method is not necessarily a substitute for existing instructional activities. In fact, the video case method probably works best when it accompanies classroom instruction, with the instructor providing detailed information about theoretical background and conducting additional discussion of the video cases. Real-life observations are also important because they allow the participant to observe what the video misses. Also, student teachers need the opportunity to discuss what they observe with their teacher mentor.

One participant in the pilot study was so excited about this new method that she suggested that textbooks be replaced with the video case method. She saw that this method could more effectively demonstrate textbook contents than could the textbooks themselves. Though her idea is, perhaps, extreme, the video case method does have great potential to furnish the knowledge base of teacher education.

In addition, the project has created new academic opportunities that are beyond the scope of the project itself. First of all, it has renewed the collaborative relationship between Beijing Normal University and Brigham Young University. Since the beginning

of this project, five faculty members of the School of Education at BYU and I have visited BNU, and three faculty members of BNU have visited BYU. One of them is now on a one-year visiting, scholarship at BYU. We have also set up desktop video conferencing between the two institutions so that we can hold regular meetings to discuss collaborative projects.

In May 2000, BNU and BYU co-organized a national symposium on teacher education in Beijing, with the sponsorship of the Ministry of Education and the two institutions. More than a hundred teacher educators from the nation's top normal universities and normal colleges came to receive training on "Promising Practices in Teacher Education for the 21st Century." As part of this symposium, the video case CD-ROM was introduced to these educators, and copies were provided for their individual institutional use. The collaborative relationship for this symposium was ignited partly by this project.

Because the Ministry of Education is now working on the "Education for the 21st Century" plan, some officials have indicated that they are interested in involving BYU in the training process, and we shall expect a working relationship to evolve between them.

As a Chinese scholar, my hope is to make use of the resources in the United States to help develop education in China. I believe people in both countries will mutually benefit from international collaboration.

Critique

Developing the first ethnographic video case CD-ROM has been a demanding, but rewarding, process. Overall, the project has achieved its purposes in creating a new instructional tool that aids in the professional development of teachers in China. Though

it began as a student project, we took it beyond the scope of an academic exercise and to create a product that could benefit China on a large scale. As its author, I see that this project has unique strengths, though I admit that there is room for improving and for further research.

Strengths of the Project

The strengths of this project are its successful completion, its introduction of a new medium of instruction, and its opening up new opportunities for the professional development of teachers in China. There are also strengths in its evaluation that are contrasting with the evaluation's weaknesses.

Successful completion of the project. As recognized by those who have had experience working in China, completion of a collaborative project within a relatively short period of time is quite exceptional considering the distance between collaborators, language barriers, communication costs, and cultural differences. A number of misunderstandings could have caused the project to suffer or even to terminate. Yet, our supportive associates in Beijing Normal University and Beijing Number Five Secondary School removed the obstacles and cleared the way for us to produce a successful product.

One example of a potential obstacle is what happened on my first trip to Beijing when to my surprise, I learned that the video recording had been completed before my arrival. I had not known about this production. The recorded video was not in the correct format and did not have a high enough quality for ethnographic video cases. After much negotiation, our associates in Beijing were able to reschedule all the shootings in a very short time, and we shot more than ten hours of footage in that one week.

Another problem arose during the pilot study. We were not able to see the computer lab where we were going to conduct the pilot study until minutes before the subjects arrived. When we finally entered the computer lab, we found that only the computer server had a CD-ROM drive. Using our own laptop computer and the principal's computer, which had a CD-ROM drive, we could gather only three computers with the necessary drives for the pilot study. However, we had ten subjects scheduled to arrive at any moment. I quickly proposed that we copy the entire CD onto the server, and from the server to another computer, and then from that computer to another computer. The process was slow, but we finally got the program installed on enough computers to conduct the pilot.

These are just two typical examples of obstacles that occurred in the process. Thanks to the support from both our Chinese and American associates, the problems were eventually solved, and the project completed. These experiences remind us of the importance of being flexible, patient, and creative when working on international collaborative projects.

New medium of instruction. The Ethnographic Video Case CD-ROM is a new medium of instruction for teacher training in China. It provides a new way of learning that allows for situated cognition and other cognitive activities by showing how educational principles apply in real-life situations. This method of learning allows users to actively inquire and learn not only from the situation itself, but also from various experts in the fields. This helps users see beyond the obvious. The Editing and Commentary Room functions provide a way for users to construct their own cases to use in various situations. This way of teaching and learning is different from the way

teacher-learners are usually taught in normal institutions in China. It opens up new learning that previously had been impossible.

New learning opportunities. As indicated in the beginning of this report, one reason this project was initiated was to met the need for teacher training in rural areas in China, in which it has been difficult to provide training for teachers because of the distances between them. With the help of ethnographic video case CD-ROMs, teachers in the most remote areas of China can receive the training they need. If the ethnographic video case CD-ROMs are widely accepted in China, these teachers could receive the same quality of training as do their urban counterparts, at least in this particular area of instruction.

Evaluation. In critiquing the evaluation of this project, I used eight of the thirty standards recommended by the Joint Committee on Standards for Educational Evaluation (Sanders, 1994). I selected the eight standards that seemed to be most relevant and effective in showing the strengths and weaknesses of the evaluation. Four of them I used to show strengths, and the other four to show improvements. The four standards I used to show strengths are Stakeholder Identification, Political Viability, Human Interaction, and Analysis of Qualitative Information.

We had already identified the stakeholders and their needs at the beginning of the project so that both the product itself and the evaluation would be most beneficial to them. The major stakeholders (see pages 5 to 6) actively participated throughout the evaluation process so that when they saw areas that needed to be modified, they could make suggestions for improvement.

Making this evaluation politically viable required not only anticipating the different positions of various interest groups but also the different bureaucratic protocols that we had to work with because of the project's international nature. With sincere, sensitive, and frequent communication, we obtained the cooperation of each group, and no one curtailed the evaluation operations or misapplied the results.

The participants in the pilot testing and the stakeholders in the evaluation all treated each other professionally and with respect. The major stakeholders mixed often—they ate dinner together, went sight seeing together, and met together often. We also brought fruits and small souvenirs to the participants.

We collected much qualitative information that helped answer the evaluation questions (see page 39). Though organizing this information into a meaningful way has been a demanding task, we manage to use it to better understand the users' feeling and to prepare for future research and development.

Areas for Improvement

There is room for improvement can be found in its timeline, budget, and evaluation.

Timeline. The production and the evaluation of this project were very efficient. From shooting the videos to producing the CD-ROM, it took approximately three months (see Appendix E). Compared to the production of other such cases, this CD-ROM required less time, and I was able to handle most of the production process myself. While other case videos had had different people doing the video editing, graphic design, digitizing, programming, and other related work, I was able to complete most of it, needing assistance only in narrating and transcribing the commentaries. However, after

the completion of the pilot study, my involvement in other projects greatly slowed down the report writing.

Budget. The budget for this project was more than anticipated in terms of the number of hours for the production and evaluation work. There were many unforeseen difficulties in the production process. After all, this was the first version of the Chinese ethnographic video case CD-ROM made in the United States. However, because my overtime hours were not paid, they did not incur additional expenses on the project. If all the hours had been paid in full, this project would have been much more expensive.

Evaluation. The evaluation standards in which this project lacks behind include Evaluator Credibility, Report Timeliness and Dissemination, Fiscal Responsibility, and Analysis of Quantitative Information.

As the producer of the CD-ROM, and with my training in evaluation, I know best how to gather and analyze the formative data. However, this active involvement may have biased my analysis of the data. An outside evaluator could have produced a more credible result. Nevertheless, the project did not have the budget to hire one, and such was not the focus of the evaluation.

As indicated earlier, this project has slowed down after the pilot test. Although I have shared the major findings of the evaluation with the stakeholders so that they can use them for their own purposes, it would have been helpful if I had produced results they needed sooner.

My evaluation does not reflect sound accountability procedure, mainly because it was done on my own time and because it does not particularly interest other stakeholders.

If this were to be a full-scale evaluation project, the evaluator's allocation and expenditure of resources would have to be reported in detail.

In this evaluation, there would have been more information if some quantifying instruments, such as the Likert scale, had been used to measure some of the opinions and constructs. However, so much time was devoted to the development process before the evaluation that we could not produce such an instrument.

Video ethnography is a dynamic, flexible tool to release the human potential. It can be used for teaching and learning across all content areas. Its full potential is just beginning to be unveiled. It is my hope that it will be used to advance professional development of teachers in China and bring much learning among our young.

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Appendix A: Focus Group

This is a sample of the notes taken during a focus group session on March 23, 1999. The names of those who participated in this session were removed from this sample. Their comments were categorized later into Instructional Design, Content, and Training. Instructional Design included comments relating to the CD-ROM as an instructional tool. Content was that of the CD. Training referred to the CD as a teacher-training medium.

This focus group session was held after four participants finished viewing the video case of the second teacher during Session Two.

Instructional Design	Comments from users: I can learn pedagogy using this method. I can review the interesting parts and skip the uninteresting parts. I am especially interested in the different perspectives and that the teacher himself gives the rationale for teaching in this way. This helps me understand the teachers better. Improvement: Can we see examples of the students' writing after the lesson? We had heard of the teaching methods demonstrated today, but we had understand what they were about seeing how they work has really helped us. Improvement: There could be more methods and more examples. There need to be some sample writings from the students for users to review. All of them say they agree. This program is very useful for teacher training (Everybody agrees) I hope there will be other cases focusing on other educational topics such as dealing with at-risk students etc. The time required to complete a case is not too long. If it's available, we would like to review it more. I learn more from this format. Suggestions: How about a perspective that gives overall comments which sum up all other comments.
Content	Pretty good. Before the training, I had some understanding of the Five Traits of Thinking but now I can say I really understand it, especially the part about Fluency using timed exercises. I have learned a lot of different techniques. My understanding is much better today.

	The standard today is higher than yesterday's but there is no big difference between an instructional lesson and a practice lesson. (We call the first study "Instructional Lesson," the second study "Practice Lesson," and the third study "Evaluation Lesson.") On application: because this is a key school, students here have higher academic skills. Our students' work will need more correction because they make more word and grammatical errors. There are many methods and many inspirations. Writing about the music you hear is a good exercise for writing descriptive essays. Training that focuses on the traits of thinking is very good and should start from a very young age. This study is more interesting-the essay topics especially. Now I have a much deeper understanding of the five traits. This study of the 2nd teacher is more interesting than the first one. It is a better demonstration of critical training because the first teacher has already done the critical thinking for the students. Using music for achieving creative thinking is a better method than the last one. It also better illustrate profound thinking because the method the teacher uses is more complex than writing about a cartoon which method the previous teacher used. (Choice of materials) I have learned about the Thinking Traits other than skills in teaching Chinese language.
Training	In the continuing education classes I take, I learn more about content (Chinese) rather than thinking skills. There's a strong emphasis in memorization, but I often forget the content anyway. In one class, there are over one hundred people representing a variety of backgrounds. There are many distractions in life that keep me from focusing on those courses. I prefer more training on pedagogy to training on content (subject) teaching because you can always look up contents, but it's difficult to look up pedagogical knowledge. I have received most of my training in teaching from my college classes, but have received litter training in raising the interest levels of the students. I've come to this program expecting to learn to improve my teaching. I am required to come to this training. I am usually quite lazy, so if it is not required, I won't go to any training.

Appendix B: Interview

This is a sample of the notes taken during an interview on March 23, 1999 after the participant had finished viewing the second video case in the CD-ROM

Instructional Design	In traditional teacher training classes, we often do not have the opportunity to ask questions or review materials covered. With this multimedia interface, we can review at home.
Content	The best parts of the program are Flexible and Critical Thinking. Using a skit to illustrate a story is a good way to develop critical thinking. Using music to train creative and fluent thinking is not as effective as other methods. The illustrated methods are good for high school students but they are not as good for my students (from junior high). (She felt that lower-level students such as hers need more straightforward instructions.) As a new teacher, I've learned a lot from this program. I have done some similar activities in my class. I showed them the video of "The Emperor's New Clothes" and had the students write about it. (In describing what she might do differently, she indicated that instead of having the students describe the classical music they hear, she might use light music that represents nature and animals and have the students write a story.

Appendix C: Observation

This is a sample of the notes I took when I was observing a particular participant and some information about her technological background.

Technological Background	She took a computer course in college, but had never used a computer. Because she found computers to be useless and boring, she attended the class only a couple of times yet still managed to pass the class because it used paper and pencil tests. She indicated that she had no recollection of what she was taught. Therefore, she does not know how to use the keyboard or the mouse. We had to teach her as if she had had no computer knowledge at all. When the screen saver came on, she figured out how to move the mouse and stop it on her own.
Observed Behavior	3/22/99 Observed difficulty in using the mouse and keyboard (30 mins to 1hr) 8:20am 3/23/99 She started by going to the expert's perspective. She read the perspective first, copied a lot of it down, and then listened to it. 8:27am She started the 2nd probe (Fluency). She listened to the general concept first and then viewed the video twice. She clicked on the probe button to start the video over rather than use the movie slider. She listened and read the probes rather than just read them first. She wrote down lots of notes. 8:40am She started the 3rd probe (Flexibility). She went straight to the video instead of going to the general concept perspective first. 8:52am She started the 4th probe. As she listened to the perspectives, she read along. She always read along while listening to the perspectives. 9:06am Started 5th probe. She laughed a little at the "funny doctor" skit and wrote down some notes. 9:30am Started the conclusion part.
Appeal / Applications	In order to apply the skills learned from the program, students in my school may need more materials. The students in Beijing No.5 school (as seen on the CD-ROM) may be better students. 3/23/99

Appendix D: Self-report

一、有。但没有理论指导，只是盲目地做而已。

例如：引导学生看漫画，让学生写成记叙文。给学生讲"将军投宿记"让学生续写结尾，当时我就发现学生更爱写这类作文，而且写的很好。只是当时我只是基于投其所好，激发学生的写作兴趣才那样做。通过看录相有了理论上的认识，反过来，可以用理论指导实践，这样学生的写作训练就更有科学性和连贯性。对思维的灵活性、敏捷性未训练过。

二、思维的创造性方面：我一般是给学生文章，让学生自己总结出文章文体上的特点，再把一些文体知识，和理论告诉他们，然后让他们先仿写，仿写之后再自己创作。

在敏捷性、灵活性方面我从未尝试过。

对思维的独创性训练较多，例如鲁迅写"论费厄泼赖应该缓行"一文，认为流氓多事，费厄应该，我让学生议论此事，有的学生就有理有据的说流氓是一个乘公执法的人，对这种意见我给予及时的肯定，即使是名家名篇，我们也要有所选择地学习。尤其注意在分析课文中体会作者用词、用标点是否恰当，培养学生的自信心，提高他们的

分析判断能力，敢于批判，用"更新"的视角审视文章，
审视社会。

三、不足真是太多了。

首先，我的教学缺乏理论指导，只是尝试而已，比较盲目，因此，没有连贯性，不能使学生形成完整的思维体系。不能真正调动学生的思维潜能。

其次，缺少作文设计，不是从根本上解决学生在作文中所遇到的问题，以及学生通过作文要提高的思维品质，而是疲于应考，把一些类似八股的东西教给学生，帮助他们较容易地在考试中取得好成绩。相形之下，我以前的做法实际上只是提高了作文成绩，抑制了学生的思维品质的提高。

第三 通过看录相我体会到作文水平的提高应从提高学生的思维品质抓起，作为老师应努力地在作文课怎么上这方面下功夫，并且对初中阶段进行一个较完整的设计，使学生真的更"聪明"。

Appendix E: Schedule

Provided below is the original schedule for the project. Most of the events followed this schedule until after the pilot study in China. Because of my own schedule conflict, I failed to finish the report until the next year.

1998	
11/18	Submission of preliminary prospectus
11/25	Submission of prospectus (2nd draft)
12/2	Submission of final prospectus
12/09	Approval of prospectus
12/11 to 12/24 (12)	Video-recording, onsite editing, evaluating, audio recording, selection of perspective segments
1998 - 1999	
12/29 to 1/19 (15)	Digitizing & transcribing the videos; design Help, Tutorial, and Five Traits of Thinking pages
1/20 to 1/27 (6)	Selection of video clips and perspectives for probes
1/28 to 1/29 (2)	Audio recording for all introductory and tutorial pieces.
2/1 to 2/12 (10)	Programming the CD-ROM
2/15 to 2/26 (10)	Design of the evaluation instrument
3/1 to 3/5 (5)	Formative evaluation & Modifications
3/8 to 3/10 (3)	Expert evaluation (US) & Test-run evaluation instrument
3/11 to 3/22 (10)	Pilot Study in China
3/23 to 4/6 (10)	Analyze the data
4/7 to 4/21 (10)	Write up the project
4/22 to 5/6 (10)	Proofread and edit the project
5/7 to 14 (6)	Submission of project